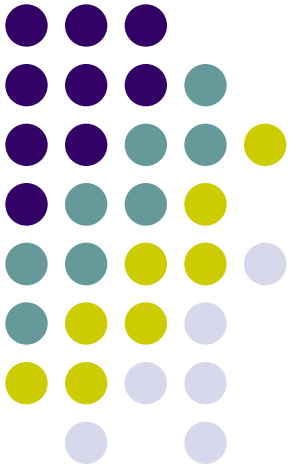
SOx RECLAIM Proposed Amended Regulation XX

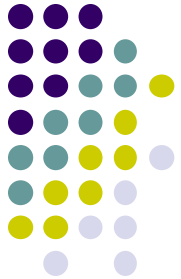
Working Group Meeting



SCAQMD

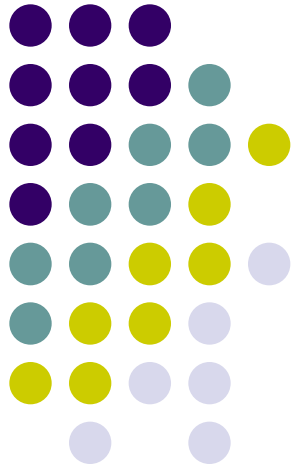
August 27, 2009

Outline Presentation



- Background
- Staff's Proposal – **What is New?**
  - **Revised RTC Reductions & Scenario Study**
  - **Sustainability Analysis**
  - **Water Demand & Wastewater Analysis**
  - **CEMS**
- Public Comments
- Schedule

Background



Background

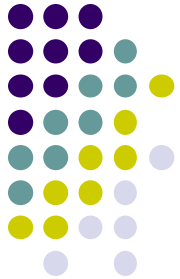
- 2007 AQMP Control Measure CMB-02: "Further Reductions of SOx for RECLAIM (BARCT)"
- Initial Public Consultation Meeting
  - February 7, 2008
- Meetings with Affected Industries
- Stationary Source Committee Updates
  - June 20, 2008 & June 19, 2009
- Public Workshop
  - June 23, 2009
  - Public Comments Ended on July 14 for Rule & July 21 for CEQA

Background

- Why Reduce SOx?
  - Federal Annual Average Standard By 2015 & 24-Hour Average Standard By 2020
  - PM2.5 Formation Potential:

    SOx :PM2.5:NOx = 15:10:1
  - SIP Commitment 3 TPD Reductions By 2014
  - Command & Control Equivalency Through Periodic BARCT Reassessment

Best Available Retrofit Control Technology (BARCT)



- … an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of sources. (H&S Code §40406)
- ….achieve an equivalent or greater level of emission reductions at an equivalent or lower cost as would have been achieved under a command-and control rule. (H&S Code §39616)

Staff Assessment In 2008

- Preliminary Draft Staff Report – April 2008
- 33 Facilities in SOx RECLAIM
- Amendment Focus:

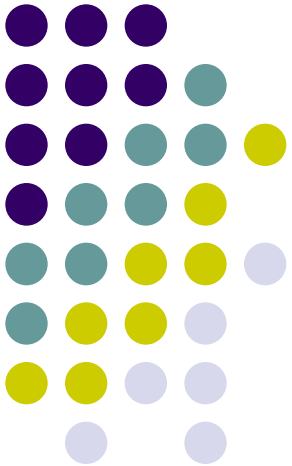
  11 Top Facilities & 7 Top Categories of Sources
  - Fluid Catalytic Cracking Units
  - Sulfur Recovery Units/Tail Gas
  - Refinery Boilers/Heaters
  - Sulfuric Acid Plants
  - Coke Calciner
  - Glass Melting Furnace
  - Cement Kilns & Coal-Fired Boiler

Consultant Contracts & Approach

- RFP Released in July 2008
- Awards $335 K to 2 Contractors (Sub-contractor) – NEXIDEA Inc., ETS Inc. & AEC Engineering
- Consultants' Recommendations
  - 6.5 TPD RTC Reductions
  - 70% RTC

Staff's Proposal

What is New?



RTC Reductions Methodology

Projected 2014 Emissions = 1997 Baseline x Growth Factor x Control Factor

RTC Reductions in 2014 = RTC Holdings – (1.1 x Projected 2014 Emissions)

Where:

1997 Baseline = Actual Emissions in 1997

Growth Factor = SCAG Growth Factor from 1997–2014

Control Factor = New BARCT/Start Emission Factor

ERC Holdings = 11.76 TPD

1.1 Adjustment Factor = 10% Compliance Margin

Scenario Study

- **Five Scenarios**
- **Scenario 1 – Most Stringent**
  - % Reduction = 73%

    1 PPMV for FCCUs, SRU/TGTUs, Glass, Cement

    5 PPMV for Sulfuric Acid, Coke Calciner

    All Possible Additional Control for Boilers/Heaters
- **Scenario 2 – Consultants' Recommendation**
  - % Reduction = 69%

    1 PPMV for Glass, Cement

    5 PPMV for FCCUs, SRU/TGTUs

    10 PPMV for Sulfuric Acid, Coke Calciner

    All Possible Additional Control for Boilers/Heaters

Scenario Study

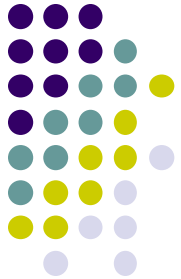
- **Scenario 3A – Staff's Proposal**
  - % Reduction = 65%

    5 PPMV for FCCUs ,Cement & Glass, SRU/TGTUs,

    10 PPMV for Sulfuric Acid & Coke Calciner,

    Tier I Level For Boilers/Heaters
  - Other Updates:
    - Put Aside Cases Resulting In >50 K/Ton (1 for FCCU, 2 for SRU/TGTUs, 1 for Boilers/Heaters)
    - Revise 97-98 Inventory for Sulfuric Acid Plants from 0.75 tpd to 1.28 tpd and Inventory for Boilers/Heaters from 7.08 tpd to 6.5 tpd
    - Revise Growth Factor for "Others" from 1 to 1.07
    - Revise BARCT for SRU/TG from to 4.72 lbs/hr to 5.28 lbs/hr, and control factor from 0.56 to 0.63
    - Revise BARCT for Cement from 0.035 to 0.04 lbs/ton

Scenario Study



- **Scenario 3B – Staff's Alternative Proposal**
  - % Reduction = 60%
    - Allow the Use of DeSOx Catalysts
    - Allow 10 PPMV for Other Categories with Wet or Dry Scrubbers
    - Allow Tier I Level For Boilers/Heaters
- **Scenario 4 – AQMP Proposal (3 TPD)**
  - % Reduction = 16%

Scenario Study - Results

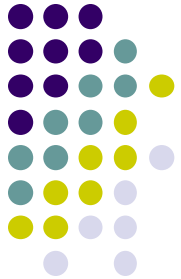
Scenario	% RTC Reduction	RTC Reduction	PWV ($)	CE ($/ton)
1 (Most Stringent)	73%	8.5 tpd	$1 Billion	15K
2 (Consultants)	70%	8.1 tpd	$1 Billion	17K
3A (Staff's Proposal)	65%	7.5 tpd	$745 Million	13K
3B (Staff's Alternative)	60%	6.9 tpd	$884 Million	16K
4 (AQMP)	16%	2.9 tpd *	$359 Million	14K

*Case 4 results in about 2.9 tpd RTC reduction without 1.1 compliance factor.

Proposed Amended Rule 2002

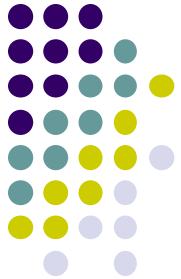
- Potential RTC Reductions = 6.9 TPD - 7.5 TPD
- Potential % RTC Reductions = 60% - 65%
- Equivalent Reductions to Implementing Command-Control Rules
- Six-Year Implementation
  - 1.5 TPD in CY 2012
  - 1.5 TPD in CY 2013
  - 1.5 TPD in CY 2014
  - 1.0 TPD in CY 2015
  - 1.0 TPD in CY 2016
  - 0.4 TPD - 1 TPD in CY 2017

Sustainability Analysis



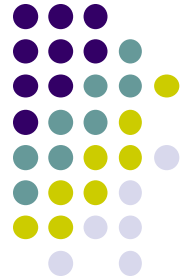
- Sustainable = Able to Continue or Last Within Its Boundary of Operation
- Can All Facilities (BARCT Facilities & Non-BARCT Facilities) Sustain 60% - 65% RTC Reduction?
- Do Non-BARCT Facilities Have Enough Surplus RTC to Remain In Compliance?
- Further Discussion Needed

Water & Wastewater Analysis



- Distribute Survey Questionnaire
- Receive Summary of Responses from All Facilities Except Two Refineries
- Summary Provided (Handout)
- Water and Wastewater Usages for SRU/TGTUs Need To Be Adjusted Based On Additional Data
  - Staff's Heat/Mass Balance Calculation
  - Manufacturers' Information

Water & Wastewater Analysis



- Preliminary Analysis on Water Demand
  - % Increase in Water Usage Below 10% (Average)
  - No Permit/Regulatory Requirements Limiting Water Demand
  - For Facilities that Have Groundwater Wells, Remaining Capacity of Pumping Available
  - Recycled Water Is Used In Some Facilities

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* Water usages for SRU/TGTUs need to be adjusted

Water & Wastewater Analysis

- Preliminary Analysis on Wastewater
  - Increase in Discharge = 316 million gals/year*
  - Remaining Wastewater Treatment & Discharge Capacity Available
  - Wastewater Discharge <25% Existing Limit: No Need to Revise Discharge Permit
  - Some Facilities May Need to Manage Peak Flow

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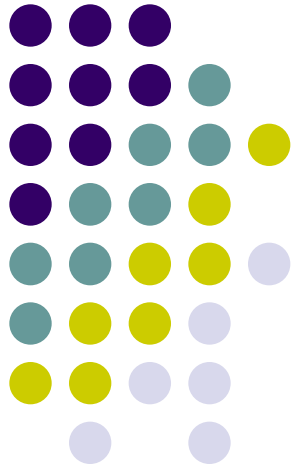
* Discharge for SRU/TGTUs' scrubbers need to be adjusted

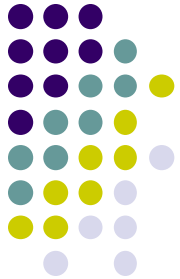
CEMS

- Capable of Measuring Below 5 PPMV
- Approximate Costs Lower Than Estimated By Consultants

Public Comments



Comments - Equity & Implementation

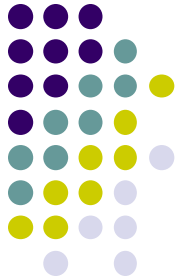


- Should develop facility-specific and technology-specific allocation reductions. Many facilities are super-compliant facilities that cannot reduce further. Other facilities do not have any equipment that are subject to BARCT.
- Start RTC reductions in 2014 not in 2012
- Start 3 TPD reduction first. Need further analysis during the PM2.5 Plan Update if additional tons are needed

Comments - BARCT

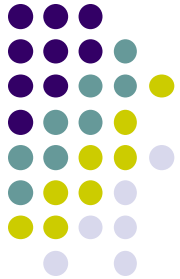
- BARCT methodology was not defined upfront
- BARCT should only be the levels achieved-in-practice, not technology forcing levels
- Lack of supporting information, achieved-in-practice information

Comments - Environmental & Economic Impacts



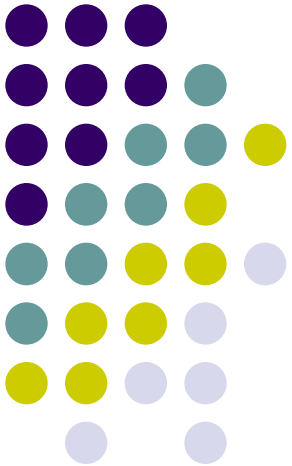
- Environmental impacts were not yet analyzed
  - Large fresh water consumption
  - Large wastewater discharge
  - No analysis on energy impacts
  - No analysis on greenhouse gases impacts
- Economics impacts were not yet analyzed

Comments – Cost Effectiveness

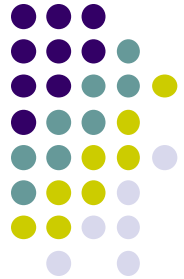


- Equivalent ratio for $/ton NOx and $/ton PM2.5 from $/ton SOx should be approved by the Board first
- Lack of cost effectiveness threshold. Is $100K per ton a cut-off level? Command-control rule would not exempt one facility just because its costs were too high
- Scenario study based on same technologies
- Need a scenario at the level achieved in practice & a scenario for 3 tons per day reduction in AQMP
- Need to include incremental cost effectiveness

Schedule



Future Rule Development Process



- Continue to Meet with Stakeholders
- CEQA & SocioEconomic Analyses
- Sustainability Analysis
- Further Evaluation To Select Final BARCT Levels & RTC Reduction

Schedule

Release Draft EA	September 2009
Finalize EA	October 2009
Board Hearing	**November 6, 2009**

Contacts

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  - Barbara Radlein by phone: (909) 396-2716
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